

### **REMARKS/ARGUMENTS**

In the Final Office Action, mailed on 7 February 2006, the Examiner maintained the rejection of claims 1-7, 10-11, and 13-32 under 35 USC 102(e) on Nishimura et al. US6828078 and claim 8 under 35 USC 103(a) on Nishimura. Claims 1-8, 10-11, and 13-32 are under consideration in the present application. Claims 9, 12, and 33-63 had previously been canceled. Applicant respectfully requests reconsideration of the application by the Examiner in light of the following remarks.

#### Claims 1-8, 10-11, and 13-15

Applicant respectfully submits that Nishimura does not teach or disclose the independent claim 1 recitations of (with emphasis added):

1. A method of forming a waveguide comprising a core region, a cladding region, and an index contrast region situated therebetween, the method comprising:  
depositing a polymerizable composite on a substrate to form a layer,  
patterning the layer to define an exposed area and an unexposed area of the layer in a manner such that the unexposed area includes the core region,  
irradiating the exposed area of the layer, and  
**volatilizing the uncured monomer to form the waveguide, wherein the polymerizable composite comprises a polymer binder and sufficient quantities of an uncured monomer to diffuse into the exposed area of the layer and form the index contrast region.**

Applicant argued the "volatilizing the uncured monomer" recitation in the prior amendment.

The Final Office Action states:

Claims 1-7, 10, 11, and 13-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishimura et al (see passages noted in the first action, in particular col. 61, lines 55-63).

The decomposition and diffusion of sufficient quantities of uncured monomer to form an index contrast region is taught at column 61, lines 55-63. In particular, the optical waveguide upper and lower clad layers contain a "slightly generated acid" which acts as the diffusion source region and diffuses at the interface between the core and upper clad and core and lower clad layers, thereby forming a refractive index distribution.

...

Applicant submits that Nishimura et al simply decomposes and volatilizes, but shows no diffusion. As pointed out in paragraph 1, supra, such is believed to be in error. While there may be differences in the instant invention and that shown in Nishimura et al, it is respectfully submitted that these have yet to be recited.

Lines 55-63 of column 61 are as follows:

As the obtained optical waveguide contained an optically acid generator in the upper and lower clad layers, the diffusion of a slightly generated acid occurred at the interfaces between the core layer and the upper clad layer and between the core layer and the lower clad layer. Thereby, a refractive index distribution was formed at the interfaces of the upper, side and lower clad portions with the core layer, whereby the obtained optical waveguide was of a GI type.

Applicant submits, however, that Nishimura describes generation of a "low RI (refractive index)" area by locally generating (by photo patterning) an acid which decomposes the high RI component (A)

which then must be removed from the system by volatilization. The decomposition only reduces the molecular weight of the high RI component so it can volatilize - the decomposition does not change the RI. Once volatilized, the region has less of the high RI component-A and therefore a lower RI. Decomposition itself does not change the RI of component-A or the region. The RI only decreases when component-A is removed. The degree of decomposition of component-A and resulting amount volatilized (and subsequent change in RI) probably is effected by the amount of photoacid present, and the photoacid may be able to move around (or diffuse) a bit, but decomposition/volatilization of component-A is what causes the RI change. More specifically, **uncured monomers are not described or present in Nishimura's patent**, and no polymerization is described as forming RI contrast areas.

As also stated in Applicant's prior amendment,

Claim 1 additionally includes the recitation of "wherein the polymerizable composite comprises a polymer binder and sufficient quantities of an uncured monomer to diffuse into the exposed area of the layer and form the index contrast region." Applicant can find no disclosure of this recitation in Nishimura.

Applicant does not see a response to this argument in the present office action and continues to submit that Nishimura does not disclose the above recitation of the polymerizable composite.

Accordingly, Applicant respectfully submits that claim 1, and claims 2-8, 10-11, and 13 15 which depend therefrom, define allowable subject matter over Nishimura.

#### Claims 16-32

Applicant respectfully submits that Nishimura does not teach or disclose the independent claim 16 recitations of (with emphasis added):

16. A method of forming a waveguide comprising a core region, a cladding region, and an index contrast region situated therebetween, the method comprising:  
providing a polymerizable composite comprising a polymer binder and an uncured monomer,  
depositing the polymerizable composite on a substrate to form a layer,  
patterning the layer to define an exposed area and an unexposed area of the layer, **one portion of the unexposed area comprising the core region and another portion of the unexposed area comprising a diffusion source region,**  
irradiating the exposed area of the layer, and  
**volatilizing the uncured monomer to form the waveguide and index contrast region.**

The volatilizing uncured monomer recitation is discussed above with respect to claim 1. Claim 16 additionally includes the recitation of: one portion of the unexposed area comprising the core region and another portion of the unexposed area comprising a diffusion source region. Applicants can find no reference to a diffusion source region in Nishimura or in the Office Action discussion of Nishimura or claim 16. These are described in Applicant's specification with respect to at least FIGs. 14-19, for example.

Accordingly, Applicant respectfully submits that claim 16, and claims 17-32 which depend

therefrom define allowable subject matter over Nishimura.

Summary

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. Should the Examiner believe that anything further is needed to place the application in better condition for allowance, the Examiner is requested to contact Applicant's undersigned representative at the telephone number below.

Respectfully submitted,

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